

Serial No. 09/289,843
Filed: April 9, 1999
Examiner: R. Gorr
Group Art Unit: 1711

REMARKS

Claims 1 and 15 have been amended and new claim 17 has been presented. Specifically, in claims 1 and 15 the amount of the hydrocarbon blowing agent has been limited to from about 5 to about 25 parts per hundred of polyols ("php"). Claim 17 parallels original claim 1 and specifies that the amount of hydrocarbon blowing agent is from about 10 to about 35 php. Support for these limitations is found on page 28, at lines 18-20 of the specification. These limitations have been added to more particularly point out the subject matter Applicants consider the invention. Further, these limitations have been added in response to the Examiner's comments in paragraph 6, on page 3 of the Office Action mailed May 1, 2001. With these amendments, the claims pending are claims 1-17.

Applicants respectfully submit that the amended claims are patentable over U.S. Patent No. 4,644,048 ("Magnus") in view of the Van Der Wouden (Utech 94) article. Applicants have previously discussed why Magnus in view of Van Der Wouden (Utech 94) does not provide a reasonable expectation of success in making the compositions of the instant claims.

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In summary, Van Der Wouden (Utech 94) teaches that well over 50 percent by weight hydrophobic component is required for enabling hydrocarbon compatibility. Magnus is silent on the issue of hydrocarbon compatibility, and only teaches that incorporating up to 28 mole percent of hydrophobic component into a polyester polyol enables fluorocarbon compatibility. Van Der Wouden (Utech 94) shows that there is a need to use very high hydrophobic content to compatibilize hydrocarbon blowing agents. Thus, Van Der Wouden (Utech 94) would lead one to expect the use of low levels of hydrophobic material to lead to a lack of hydrocarbon compatibility. In other words, levels from about 1 to about 40 percent by weight of hydrophobic material would be expected to be unacceptable for compatibilizing a hydrocarbon blowing agent. To the contrary, however, the level of hydrophobic material of about 1 to about 40 percent required by the instant claims leads to polyols that are unexpectedly found to be acceptable in making foams with hydrocarbon blowing agents.

Thus, in view of the teachings of the Magnus and Van Der Wouden (Utech 94) references, it is certainly surprising that much lower levels of hydrophobic materials

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are effective in compatibilizing significant amounts of hydrocarbons.

In the action, the Examiner argues that "it's reasonable to expect the polyol compositions of Magnus to be able to dissolve this same amount, and probably more of pentane." This statement appears to refer to the minimum amount of hydrocarbon blowing agent permitted by the claims as originally filed. Applicants respectfully point out that there is no basis for this conclusion. However, even if this conclusion can be considered valid, it does not apply to Applicant's amended claims. There is nothing in either of the cited references to indicate that incorporating only about 40 percent by weight or less of a hydrophobic component would sufficiently lower the polarity of the polyester polyol to enable compatibility with at least about 5 percent php of a hydrocarbon blowing agent. As a result, the claims as amended are not obvious in view of Magnus or Van Der Wouden (Utech 94). Reconsideration and withdrawal of the rejection are respectfully requested.

Reconsideration of this application is respectfully requested and a favorable determination is earnestly solicited. Should the Examiner believe that a discussion of this matter

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would be helpful, the Examiner is invited to telephone the undersigned at (312) 913-0001.

Respectfully submitted,

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Marked up version of claims showing changes

(Amended) 1. A polyol based resin blend comprising:

(a) from about 65 to about 99 percent by weight of a polyol component comprising:

(I) from about 20 to about 100 percent by weight of an aromatic polyester polyol reaction product formed by inter-esterification of:

(i) from about 10 to about 70 percent by weight of a phthalic acid based material;

(ii) from about 20 to about 60 percent by weight of a hydroxylated material having a functionality of at least 2; and

(iii) from about 1 to about 40 percent by weight of a hydrophobic material having:

(1) from one to six radicals, the radicals being selected from the group consisting of carboxylic acid groups, carboxylic acid ester groups, hydroxyl groups, and mixtures thereof;

(2) hydrocarbon groups totaling at least 4 carbon atoms for each radical present; and

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(3) an average molecular weight of from about 100 to about 1000; wherein the hydrophobic material is substantially free of dimer acid; and

(II) from 0 to about 80 percent by weight of a polyether polyol; and

(b) from about 5 to about 35 php of a C₄-C₇ hydrocarbon blowing agent.

15. (Amended) A method for preparing a rigid closed-cell polyisocyanate-based foam, comprising reacting a polyisocyanate and a polyol based resin blend, wherein the polyol based resin blend comprises:

(a) from about 65 to about 99 percent by weight of a polyol component comprising:

(I) from about 20 to about 100 percent by weight of an aromatic polyester polyol reaction product formed by inter-esterification of:

(i) from about 10 to about 70 percent by weight of a phthalic acid based material ;

marked up claims

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(ii) from about 20 to about 60 percent by weight of a hydroxylated material having a functionality of at least 2; and

(iii) from about 1 to about 40 percent by weight of a hydrophobic material having:

(1) from one to six radicals, the radicals being selected from the group consisting of carboxylic acid groups, carboxylic acid ester groups, hydroxyl groups, and mixtures thereof;

(2) hydrocarbon groups totaling at least 4 carbon atoms for each radical present; and

(3) an average molecular weight of from about 100 to about 1000;

wherein the hydrophobic material is substantially free of dimer acid; and

(II) from 0 to about 80 percent by weight of a polyether polyol; and

(b) from about 5 to about 35 php of a C₄-C₇ hydrocarbon blowing agent.

marked up claims